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FLORA OF THE ISLAND OF ZLARIN

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In the flora of the island of Zlarin 343 autochthonous including subspontaneous plant taxons and 61 taxon in the culture have been recorded. Taxonomical, ecological and phytogeographical analysis of the autochthonous and subspontaneous flora have been done. Out of the total analysis number of species 155 of them (45.19 %) belong to the Mediterranean floral element, while 160 species (46.65 %) of *therophyta* dominate in the spectrum of life forms. The results of the analysis show the mediterranean character of the flora of the island of Zlarin.

Key words: the island of Zlarin, flora, Croatia

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U flori otoka Zlarina zabilježene su 343 svojte u autohtonoj i antropokornoj flori i 61 svojta u kulturi. Izvršena je taksonomska, ekološka i fitogeografska analiza autohtone i subspontane flore. Od ukupnog broja vrsta 155 (45.19 %) od njih pripada mediteranskom flornom elementu, dok 160 vrsta (46.65 %) terofita dominira u spektru životnih oblika. Rezultati analize izražavaju mediteranski karakter flore otoka Zlarina.

Ključne riječi: otok Zlarin, flora, Hrvatska

INTRODUCTION

Zlarin is an island of the Šibenik archipelago with an area of 8.19 km^2 (Fig. 1). In 1991 only 359 people were living on the island. The island is underpopulated to such an extent due to bad transportation links.

The relief of the island abounds in relief forms. The island is built of limestone with dolomites and upper Cretaceous limestones on its southern side. The 169 m high peak called Klepac is the highest spot of the island and is also built of limestone with dolomites (MAMUŽIĆ et al., 1966).

As there is no climatological station, climatic data for Šibenik in the period 1981–1994 were taken. The average yearly temperature is 15.4 °C. According to the

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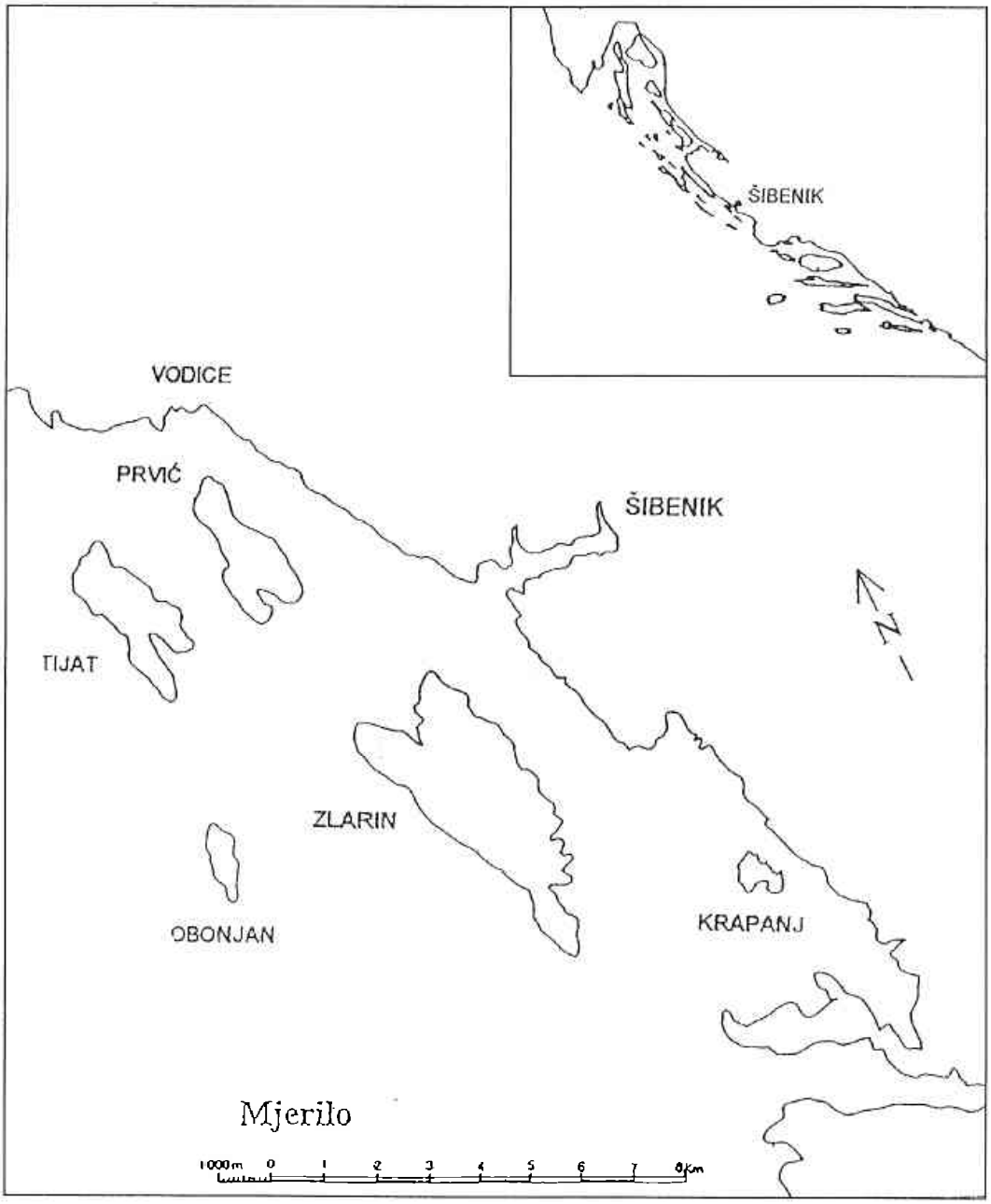

Fig. 1. The geographical position of the island of Zlarin

data of the Weather Service of the Republic of Croatia, absolute maximum temperatures go to 39.2 °C and absolute minimum temperatures to – 8.6 °C. The average annual precipitation is 690.1 mm for the period observed.

There is very little cultivated land, mainly gardens in the settlement and some olive groves.

Zlarin is, compared with other islands of the Croatian coast, floristically poorly explored. The only floristic data for the island of Zlarin were stated by VISIANI

(1842–1852), who described the following species: *Lilium candidum* L., *Crepis dioscoridis* L. and *Euphorbia pinea* L.

This research was done during 1994, 1995 and 1996.

METHODS

Plant species, genera and families are stated in alphabetical order within higher systematic units. Nomenclature is matched according to PIGNATTI (1982) with the exception of a few species which are matched according to HAYEK (1927–1933), TUTIN *et al.* (1964–1980), HORVATIĆ & TRINAJSTIĆ (1967–1981) and TRINAJSTIĆ (1975–1986).

Cultivated species (61 taxa) are marked with * as are families with cultivated species only, and they are not included in the analysis of flora.

Life forms are interpreted by HORVAT (1949), according to RAUNKIER (1934). In the list they are marked with the symbols preceding the names of the species: *therophyta* – T, *geophyta* – G, *hemicryptophyta* – H, *chamaephyta* – Ch and *phanerophyta* – P.

The division of the plants into floral elements and lower categories is done according to HORVATIĆ (1963) and HORVATIĆ *et al.* (1967–1968).The plants were grouped according to the specific floral element – the abbreviations stated in the list of flora are put after the names of the species:

1. MEDITERRANEAN FLORAL ELEMENT
   - A. Circum-Mediterranean plants – CM
   - B. East Mediterranean plants – IM
   - C. Illyrian-Mediterranean plants
     - a) Illyrian South European plants – ILJEU
     - b) Illyrian Adriatic plants:
       1. Illyrian Adriatic endemic plants – ILJAE
       2. Illyrian Apennine plants – ILAP
   - D. Mediterranean Atlantic plants – MA
   - E. European Mediterranean plants – EUM
   - F. Mediterranean Pontic plants – MP

2. ILLYRIAN-BALCANIC FLORAL ELEMENT
   - A. Illyrian-Balkanic endemic plants – IBE

3. SOUTH EUROPEAN FLORAL ELEMENT
   - A. South European Mediterranean plants – JEUM
   - B. South European Pontic plants – JEUP

4. EASTERN EUROPEAN PONTIC FLORAL ELEMENT – IEP

5. CENTRAL EUROPEAN FLORAL ELEMENT – SEF

6. EUROPEAN FLORAL ELEMENT – EF

7. EURO-ASIATIC FLORAL ELEMENT – EAF

8. CIRCUM-HOLARTIC SPREAD – CIRCUMH

9. WIDESPREAD – ŠR

10. ANTHROPOCHORNOUS – A

The analysis of the endemic species is done according to ŠILIĆ (1984) and TRINAJSTIĆ (1991, 1992).

RESULTS

Floristic list

POLYPODIOPHYTA

ASPLENIACEAE

H *Asplenium trichomanes* L., ŠR

H *Ceterach officinarum* DC., JEUM

PINOPHYTA

CUPRESSACEAE

* *Cupressus sempervirens* L. f. *sempervirens*

* C. sempervirens L. f. *horizontalis* (Miller) Voss.

P *Juniperus macrocarpa* Sibth. et Sm., CM

P *J. oxycedrus* L., CM

EPHEDRACEAE

P *Ephedra campylopoda* C. A. Meyer, IM

PINACEAE

P *Pinus halepensis* Miller, CM

MAGNOLIOPHYTA – MAGNOLIATAE

AMARANTHACEAE

T *Amaranthus albus* L., A

T *A. caudatus* L., A

T *A. deflexus* L., JEUM

T *A. graecizans* L., ŠR

T *A. retroflexus* L., ŠR

ANACARDIACEAE
P *Pistacia lentiscus* L., CM
P *P. terebinthus* L., CM

APIACEAE
* *Apium graveolens* L.
T *Bupleurum veronense* Turra, ILJEU
T *Caucalis platycarpos* L., JEUM
Ch *Crithmum maritimum* L., MA
H *Daucus carota* L., EAF
H *Foeniculum vulgare* Miller, CM
* *Petroselinum crispus* (Miller) A. W. Hill.
T *Scandix pecten-veneris* L., ŠR
H *Seseli tomentosum* Vis., ILJAE
T *Tordylium apulum* L., CM

APOCYNACEAE
* *Nerium oleander* L.
Ch *Vinca major* L., A

ARALIACEAE
P *Hedera helix* L., EF

ASTERACEAE
H *Achillea collina* Becher, SEF
T *Anthemis arvensis* L., ŠR
Ch *Artemisia coerulescens* L., ILAP
T *Aster squamatus* (Sprengel) Hieron, A
T *Bidens subalternans* DC., A
T *Calendula arvensis* L., JEUM
* *C. officinalis* L.
T *Carduus pycnocephalus* L., CM
H *Carlina corymbosa* L., CM
T *Carthamus lanatus* L., CM
H *Centaurea angustifolia* Schrank, IEP
H *C. tommasinii* Kerner, ILJAE
T *Chamomilla recutita* (L.) Rauschert, ŠR
* *Chrysanthemum coronarium* L.
T *Cirsium arvense* (L.) Scop., EAF
T *Conyza bonariensis* (L.) Cronq., JEUM
T *C. canadensis* (L.) Cronq., A
T *Crupina crupinastrum* (Moris.) Vis., JEUM
* *Cynara scolymus* L.

* *Dahlia variabilis* (Willd.) Desf.
T Filago vulgaris *Lam., ŠR*
* *Helianthus tuberosus L.*
Ch *Helichrysum italicum* (Roth) G. Don., CM
H *Inula conyza* DC., JEUP
Ch *I. crithmoides* L., MA
H *I. spiraeifolia* L. (= *I. squarrosa* L.), JEUM
H *I. viscosa* (L.) Aiton, CM
* *Leuchanthemum vulgare* Lam.
H *Onopordum illyricum* L., CM
T *Pallenis spinosa* (L.) Cass., CM
H *Picnomon acarna* (L.) Cass., CM
* *Senecio cineraria* DC.
T *S. vulgaris* L., ŠR
Ch *Tanacetum cinerariifolium* (Trevir.) Schultz-Bip., ILJAE
T *Tyrimnus leucographus* (L.) Cass., CM
* *Zinnia elegans* Jacq.

* *BIGNONIACEAE*
* *Tecoma radicans* (L.) Juss.

BORAGINACEAE
T *Borago officinalis* L., CM
H *Cynoglossum creticum* Miller, CM
H *Echium vulgare* L., EF
T *Heliotropium europaeum* L., MP
T *Myosotis ramosissima* Rochel in Schultes (= *M. collina* Hoffm.), EAF

BRASSICACEAE
Ch *Aethionema saxatile* (L.) R. Br., JEUM
Ch *Alyssanthus sinuatus* (L.) Trinajstić, ILJAE
T *Alyssum minus* (L.) Rothm., CM
* *Brassica oleracea L.*
T *Cakile maritima* Scop., ŠR
T *Capsella rubella* Reuter, CM
T *Cardamine hirsuta* L., ŠR
H *Diplotaxis tenuifolia* (L.) DC., ŠR
Ch *Erysimum cheiri* (L.) Crantz, A
T *Eruca sativa* Miller, JEUM
T *Hornungia petraea* (L.) Reichenb., ŠR
H *Lepidium graminifolium* L., JEUP
Ch *Matthiola incana* (L.) R. Br., A

T *Raphanus landra* Moretti, CM
* *R. sativus* L.
T *Sisymbrium officinale* (L.) Scop., ŠR

* *BUXACEAE*
* *Buxus sempervirens* L.

* *CACTACEAE*
* *Opuntia ficus-indica (L.) Miller*
* *CAESALPINACEAE*
* *Poinciana gilesii* Hock

CAMPANULACEAE
T *Campanula erinus* L., CM

CAPPARIDACEAE
P *Capparis spinosa* L., CM

CAPRIFOLIACEAE
P *Lonicera implexa* Aiton, CM

CARYOPHYLLACEAE
T *Cerastium semidecandrum* L., JEUP
T *Herniaria glabra* L., EAF
T *Kohlrauschia prolifera* (L.) Kunth., EAF
H *Melandrium divaricatum* (Reichenb.) Fenzl., JEUM
H *Petrorhagia saxifraga* (L.) Link, JEUM
T *Polycarpon tetraphyllum* (L.) L., JEUM
H *Saponaria officinalis* L., A
H *Silene angustifolia* (Miller) Guss. subsp. *angustifolia*, JEUM
H *S. angustifolia* (Miller) Guss. subsp. *reiseri* (K. Maly) Trinajstić, JEUM
T *S. conica* L., EAF
T *Spergularia marina* (L.) Griseb., ŠR
T *Stellaria media* (L.) Vill., ŠR
T *S. pallida* (Dumort.) Pire, ŠR

* *CELASTRACEAE*
* *Euonymus japonica* Thunb.

CHENOPODIACEAE
Ch *Arthrocnemum macrostachya* (Moric.) Koch, JEUM
T *Atriplex hastata* L., ŠR
H *Beta maritima* L., MA
* *B. vulgaris* L.

T *Chenopodium album* L., ŠR
T *Ch. murale* L., ŠR
T *Ch. vulvaria* L., JEUM
Ch *Halimione portulacoides* (L.) Aellen, ŠR
P *Kochia prostrata* (L.) Schrader, A
Ch *Salicornia fruticosa* L. (=*Sarcocornia fruticosa* (L.) A. J. Scoott), JEUM
T *Salsola soda* L., JEUP
* *Spinacia oleracea* L.
T *Suaeda maritima* (L.) Dumort., ŠR

CICHORIACEAE
H *Chondrilla juncea* L., EAF
* *Cichorium endivia* L.
H *C. intybus* L., ŠR
T *Crepis dioscoridis* L. (Vis., 1847:116), IM
T *C. sancta* (L.) Babcoock, IM
T *C. zacintha* (L.) Babcoock, CM
H *Hieracium praealtum* Will. subsp. *bauhinii* (Besser) Petunnikov, EAF
H *H. tommasinii* Reichenb. fil., IBE
* *Lactuca sativa* L.
H *L. serriola* L., ŠR
H *L. viminea* (L.) Presl., JEUP
G *Leontodon tuberosus* L., CM
H *Picris hieracioides* L., EAF
H *Reichardia picroides* (L.) Roth, CM
T *Rhagadiolus stellatus* (L.) Willd., CM
H *Scorzonera laciniata* L. (= *Podospermum resedifolium* (L.) DC.), ŠR
H *Sonchus arvensis* L., ŠR
T *S. asper* (L.) Hill. subsp. *glaucescens* (Jordan) Ball., CM
T *S. oleraceus* L., ŠR
H *Taraxacum megalorrhizon* (Forskal) Hand. – Mazz., CM
H *Tragopogon porrifolius* L., CM
H *Urospermum dalechampii* (L.) Scop. in Schmidt, CM
T *U. picroides* (L.) Scop. in Schmidt, CM

CISTACEAE
P *Cistus incanus* L. subsp. *incanus*, CM
Ch *Fumana ericoides* (Cav.) Gand., CM

CONVOLVULACEAE
G *Convolvulus arvensis* L., ŠR
H *C. cantabrica* L., JEUM
H *C. elegantissimus* Miller, IM

CRASSULACEAE
Ch *Sedum ochroleucum* Chaix , JEUM
Ch *S. sexangulare* L., EF
* *Sempervivum tectorum* L.

CUCURBITACEAE
* *Cucumis sativus* L.
G Ecballium elaterium *(L.) A. Richard, CM*
* *Sechium edule* Swartz. – Ch.

DIPSACACEAE
H *Cephalaria leucantha* (L.) Roemer et Schultes, CM
T *Tremastelma palaestinum* (L.) Janchen, IM

EUPHORBIACEAE
T *Euphorbia chamaesyce* L., JEUM
T *E. falcata* L., JEUM
Ch *E. fragifera* Jan., ILJAE
T *E. helioscopia* L., ŠR
T *E. peplus* L., ŠR
Ch *E. pinea* L. (Vis., 1852:226–227), CM
Ch *E. spinosa* L., CM
T *Mercurialis annua* L., ŠR

FABACEAE
H *Anthyllis rubicunda* Wendel, ILJAE
* *Cicer arietinum* L.
P *Colutea arborescens* L., CM
T *Coronilla cretica* L., IM
P *C. emeroides* Boiss. et Spruner, IM
T *C. scorpioides* (L.) Koch, CM
Ch *Dorycnium hirsutum* (L.) Ser., CM
H *Hippocrepis comosa* L., JEUM
T *H. unisiliquosa* L., CM
T *Lathyrus cicera* L., CM
H *L. latifolius* L., JEUM
T *L. setifolius* L., MP
Ch *Lotus cytisoides* L., CM
T *Medicago arabica* (L.) Hudson, ŠR
* *M. arborea* L.
T *M. litoralis* Rohde, CM
T *M. lupulina* L., ŠR

T *M. minima* (L.) Bartal., ŠR
T *M. orbicularis* (L.) Bartal., CM
H *Ononis pusilla* L., JEUM
* *Phaseolus vulgaris L*
* *Pisum sativum L.*
H *Psoralea bituminosa* L., CM
P *Robinia pseudacacia* L., A
T *Scorpiurus muricatus* L., CM
T *Securigera securidaca* (L.) Deg. et Doerfler, CM
* *Sophora japonica* L.
P *Spartium junceum* L., CM
T *Trifolium angustifolium* L., CM
T *T. campestre* Schreb., ŠR
T *T. scabrum* L., CM
T *T. stellatum* L., CM
T *Trigonella corniculata* (L.) L., EUM
T *T. monspeliaca* L., MP
H *Vicia cracca* L., EAF
* *V. faba* L.
T *V. lutea* L., JEUM
T *V. narbonensis* L., CM
T *V. sativa* L., ŠR

FAGACEAE
P *Quercus ilex* L., CM
P *Q. virgiliana* Ten., IEP

FUMARIACEAE
T *Fumaria officinalis* L., ŠR
T *F. parviflora* Lam., JEUM

GENTIANACEAE
T *Blackstonia perfoliata* (L) Hudson, MA
T *Centaurium erythraea* Rafin, ŠR

GERANIACEAE
T *Erodium ciconium* (L.) L. Hr., MP
T *E. cicutarium* (L.) L. Hr., ŠR
T *E.* malacoides (L.) L. Hr., CM
T *Geranium columbinum* L., EAF
T *G. lucidum* L., MA
T *G. molle* L., ŠR

T *G. purpureum* Vill., JEUM
T *G. rotundifolium* L., EAF
* *Pelargonium zonale* (L.) Aiton

HYPERICACEAE
H *Hypericum veronense* Schrank (= *H. perforatum* L.), JEUM

* *JUGLANDACEAE*
* *Juglans regia* L.

LAMIACEAE
T *Acinos arvensis* (Lam.) Dandy, EF
T *Ajuga chamaepytis* (L.) Schreb., CM
H *Balota nigra* L., JEUM
Ch *Calamintha nepeta* (L.) Savi, JEUP
T *Lamium amplexicaule* L., EAF
* *Lavandula angustifolia* Miller
H *Marrubium* incanum Desr., ILAP
Ch *Micromeria juliana* (L.) Benham , CM
Ch *Origanum* heracleoticum L., IM
* *Rosmarinus officinalis* L.
Ch *Salvia officinalis* L., ILJAE
H *S. sclarea* L., JEUM
* *S. splendens* Sellow
H *S. verbenaca* L., MA
Ch *Satureja montana* L., ILJAE
T *Sideritis romana* L., CM
H *Stachys salviifolia* Ten., ILAP
Ch *Teucrium chamaedrys* L., JEUP
Ch *T. polium* L., MP

* *LAURACEAE*
* *Laurus nobilis* L.
LINACEAE
H *Linum bienne* Miller, MA
T *L. strictum* L., CM

MALVACEAE
H *Alcea rosea* L., A
H *Althaea cannabina* L., JEUP
H *Lavatera arborea* L., EUM
T *Malva parviflora* L., CM
H *M. sylvestris* L., ŠR

MORACEAE
P *Ficus carica* L., CM
* *Morus alba* L.
* *M. nigra* L.

MYRTACEAE
P *Myrtus communis* L., CM

NYCTAGINACEAE
G *Mirabilis jalapa* L., A

OLEACEA
P *Fraxinus ornus* L., JEUM
P *Olea europaea* L., A
P *O. sylvestris* L., CM
P *Phillyrea media* L., CM
* *Syringa vulgaris* L.

OXALIDACEAE
H *Oxalis corniculata* L., ŠR
G *O. deppei* Lodd., A

PAPAVERACEAE
H *Glaucium flavum* Crantz, MA
T *Papaver rhoeas* L., ŠR

PHYTOLACCACEAE
G *Phytolacca americana* L., A
* *PITTOSPORACEAE*
* *Pittosporum tobira* (Thunb.) Aiton, fil.

PLANTAGINACEAE
H *Plantago coronopus* L., MP
H *P. lanceolata* L. var. *lanceolata*, ŠR
H *P. lanceolata* L. var. *lanuginosa* M. et K., ŠR
H *P. major* L., ŠR

PLUMBAGINACEAE
H *Limonium cancellatum* (Bernh.) O. Kuntze, ILJAE
H *L. serotinum* (Reichenb.) Pignatti, CM
Ch *Plumbago europaea* L., CM

POLYGONACEAE
T *Bilderdykia convolvulus* (L.) Dumort., ŠR
T *Polygonum aviculare* L., ŠR

H *Rumex crispus* L., ŠR
H *R. pulcher* L., JEUP

PORTULACACEAE
T *Portulaca oleracea* L., ŠR

PRIMULACEAE
T *Anagallis arvensis* L., ŠR
T *A. foemina* Miller, ŠR

PUNICACEAE
P *Punica granatum* L., CM

RANUNCULACEAE
P *Clematis flammula* L., CM
T *Delphinium staphysagria* L., CM
G *Ficaria calthaefolia* Reichenb., EF
T *Nigella damascena* L., CM

RESEDACEAE
T *Reseda alba* L., CM
T *R. lutea* L., ŠR
T *R. phyteuma* L., JEUM

RHAMNACEAE
P *Frangula rupestris* (Scop.) Schur, ILJAE
P *Paliurus spina-christi* Miller, ILJEU
P *Rhamnus alaternus* L., CM
P *Rh. intermedius* Steudel et Hochst, ILJAE
* *Ziziphus jujuba* Miller

ROSACEAE
H *Agrimonia eupatoria* L., CIRCUMH
* *Cydonia oblonga* Miller
* *Eryobotrya japonica* (Thunb.) Lindley
H *Potentilla recta* L., EAF
* *Prunus armeniaca* L.
* *P. avium* L.
* *P. cerasus* L.
* *P. dulcis* (Miller) Webb.
P *P. mahaleb* L., JEUP
* *P. persica* (L.) Batsch
P *P. spinosa* L. var. *dasyphylla* Schur, EAF
* *Pyrus communis* L.

P *Rosa sempervirens* L., CM
P *Rubus ulmifolius* Schott subsp. *dalmatinus* (Tratt.) Focke, ILAP
H *Sanguisorba minor* Scop., JEUP
P *Sorbus domestica* L., A

RUBIACEAE
H *Asperula aristata* L. subsp. *scabra* (Presl.) Nyman, JEUM
T *Crucianella latifolia* L., CM
T *Galium aparine* L., ŠR
H *G. corrudifolium* Vill., CM
P *Rubia peregrina* L., CM
T *Valantia muralis* L., CM

RUTACEAE
Ch *Ruta graveolens* L., MP

SANTALACEAE
P *Osyris alba* L., CM

SAXIFRAGACEAE
T *Saxifraga tridactylites* L., ŠR

SCROPHULARIACEAE
Ch *Antirrhinum majus* L., A
T *Chenorhinum litorale* (Bernh.) Fritsch, ILAP
H *Cymbalaria muralis* Gaertner, Meyer et Schreb., JEUM
T *Linaria simplex* (Willd.) DC. (= *L. parviflora* (Jacq) Hall., non Desf.), CM
T *L. vulgaris* Miller, EAF
T *Misopates orontium* (L.) Rafin., EAF
T *Odontites lutea* (L.) Clairv, JEUM
H *Scrophularia canina* L., JEUM
T *Verbascum orientale* (L.) All. (=*Celsia orientalis* L.), IM
H *V. sinuatum* L., CM
T *Veronica arvensis* L., EAF
T *V. cymbalaria* Bod., JEUM
T *V. hederifolia* L., EAF
T *V. persica* Poiret, ŠR

SIMAROUBACEAE
P *Ailanthus altissima* (Miller) Swingle, A

SOLANACEAE
* *Capsicum annuum* L.
T *Datura inoxia* Miller, A

T *Lycopersicon esculentum* Miller, A
T *Solanum luteum* Miller, JEUM
T *S. nigrum* L., ŠR
* *S. tuberosum* L.

* *TAMARICACEAE*
* *Tamarix dalmatica* Baum.
* *T. gallica* L.

ULMACEAE
P *Celtis australis* L., JEUM

URTICACEAE
H *Parietaria judaica* L., JEUM
T *Urtica urens* L., ŠR

VALERIANACEAE
Ch *Centranthus ruber* (L.) DC., A
T *Valerianella echinata* (L.) Lam. et DC., CM

VERBENACEAE
H *Verbena officinalis* L., ŠR
P *Vitex agnus-castus* L., CM

VIOLACEAE
T *Viola arvensis* Murray, ŠR
H *V. odorata* L., EF

VITACEAE
P *Vitis vinifera* L., A

ZYGOPHYLLACEAE
T *Tribulus terrestris* L., JEUM

MAGNOLIOPHYTA – LILIATAE

AGAVACEAE
H Agave americana *L., A*

ARACEAE
G *Arum italicum* Miller, MA

* *ARECACEAE*
* *Chamaerops humilis L.*

* *CANNACEAE*
* *Canna indica* L.

CYPERACEAE
H *Schoenus nigricans* L., ŠR

IRIDACEAE
G *Iris germanica* L., A

LILIACEAE
* *Allium cepa* L.
G *A. commutatum* Guss., CM
* *A. sativum* L.
G *A. sphaerocephalon* L., JEUM
G *A. subhirsutum* L., CM
G *Asparagus acutifolius* L., CM
G *Lilium candidum* L. (Vis. 1842:131–132), A
G *Muscari comosum* (L.) Miller, JEUM
G *M. neglectum* Guss., CM
G *Ornithogalum umbellatum* L., JEUM
P *Smilax aspera* L., CM

ORCHIDACEAE
G *Ophrys bertolonii* Moretti, JEUM

POACEAE
T *Aegilops geniculata* Roth, CM
T *Ae. triuncialis* L., CM
G *Arundo donax* L., CM
T *Avena barbata* Potter, JEUM
T *Brachypodium distachyon* (L.) Beauv., CM
H *B. retusum* (Pers.) Beauv., CM
T *Briza maxima* L. f. *maxima*, CM
T *B. maxima* L. f. *rubra* Ascherson et Graebn., CM
T *Bromus hordeaceus* L., ŠR
T *B. madritensis* L., MA
T *B. sterilis* L., ŠR
T *Catapodium marinum* (L.) Hubbard , MA
H *Chrysopogon gryllus* (L.) Trin., MP
H *Cleistogenes serotina* (L.) Keng, JEUP
H *Cynodon dactylon* (L.) Pers., ŠR
T *Cynosurus echinatus* L., JEUM
H *Dactylis hispanica* Roth, CM
T *Desmazeria rigida* (L.) Tutin, MA
H *Dichanthium ischaemum* (L.) Roberty, JEUM
T *Digitaria sanguinalis* (L.) Scop., ŠR

G *Elymus pycnanthus* (Godron) Melderis, CM
T *Eragrostis cilianensis* (All.) Hubbard, ŠR
T *E. minor* Host, ŠR
T *Hordeum leporinum* Link, CM
T *Lagurus ovatus* L., CM
H *Lolium perenne* L., EF
H *Melica ciliata* L., MP
T *Parapholis incurva* (L.) Hubbard, MA
T *Phleum echinatum* Host, CM
T *Ph. subulatum* (Savi) Aschers. et Graebn., CM
T *Poa infirma* Kunth, CM
T *Setaria verticillata* (L.) Beauv., ŠR
T *S. viridis* (L.) Beauv., ŠR
G *Sorghum halepense* (L.) Pers., ŠR
H *Stipa bromoides* (L.) Doerfler, CM
T *Tragus racemosus* (L.) All., JEUM
T *Vulpia ciliata* Dumort., JEUM
* *Zea mays* L.

THE ANALYSIS OF THE FLORA

1. Taxonomical analysis

This analysis includes a total of 343 of autochthonous and anthropochornous plant taxons. There are 2 *Polypodiophyta*, 4 *Pinophyta* and 337 *Magnoliophyta*. The richest in species are the following families: *Poaceae* (37 species, 10.79 %), *Fabaceae* (33 species, 9.62 %) and *Asteraceae* (28 species, 8.16 %).

2. Ecological analysis

This analysis includes 343 autochthonous and anthropochornous taxons. The number of life forms is shown in the table (Tab. 1).

Table 1. Life forms

LIFE FORMS	THE NUMBER OF SPECIES	%
THEROPHYTA (T)	160	46.65
HEMICRYPTOPHYTA (H)	89	25.95
PHANEROPHYTA (P)	41	11.95
CHAMAEPHYTA (Ch)	32	9.33
GEOPHYTA (G)	21	6.12
TOTAL	343	100

3. Phytogeographical analysis

An analysis of the floral elements is shown in the figure (Fig. 2).

1. Mediterranean floral element (155 species, 45.19 %)
2. Illyrian-Balcanic floral element (1 species, 0.29 %)
3. South European floral element (62 species, 18.08 %)
4. Eastern European Pontic floral element (2 species, 0.58 %)
5. Central European floral element (1 species, 0.29 %)
6. European floral element (7 species, 2.04 %)
7. Euro-Asiatic floral element (19 species, 5.54 %)
8. Circum-holartic spread (1 species, 0.29 %)
9. Widespread (69 species, 20.12 %)
10. Anthropochornous (26 species, 7.58 %)

DISCUSSION AND CONCLUSION

The flora that has been explored includes 71 families, 251 genera, 331 species, 7 subspecies, 3 varieties and 2 forms. The results of the taxonomical analysis of the autochthonous and antropochornous flora of the island show 343 plant taxons (species and lower systematic units).

Only 3 plant species have been recorded to date and this is the first work to determine 340 taxons.

Ecological analysis shows the Mediterranean character of the flora of the island of Zlarin. The most numerous life forms are *Therophyta* (160 species, 46.64 %), followed by *Hemicryptophyta* (89 species, 25.95 %), *Phanerophyta* (41 species, 11.95 %), *Chamaephyta* (32 species, 9.33 %) and *Geophyta* (21 species, 6.12 %).

Within the total number of species, 155 (45.19 %) belong to the groups of the Mediterranean floral element and among them the most numerous are Circum-

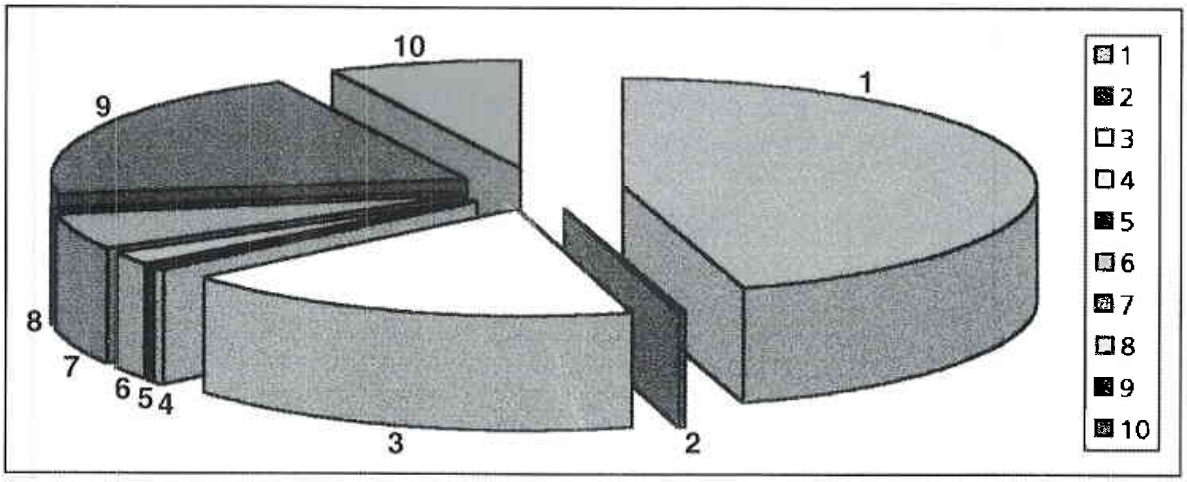

Fig. 2. Spectrum of floral elements in the flora of the island of Zlarin

Mediterranean plants (104 species, 30.33 %) and plants with a world-wide spread (69 species, 20.12 %).

From the phytogeographical standpoint, especially important plants are Illyrian Adriatic endemic plants, of which there are 11 species (3.21 %). The Illyrian Adriatic endemic plants in the flora of Zlarin are: *Alyssanthus sinuatus* (L.) Trinajstić; *Anthyllis rubicunda* Wendel; *Centaurea tommasinii* Kerner; *Euphorbia fragifera* Jan.; *Frangula rupestris* (Scop.) Schur; *Limonium cancellatum* (Bernh.) O. Kuntze; *Rhamnus intermedius* Steudel et Hochst; *Salvia officinalis* L.; *Satureja montana* L.; *Seseli tomentosum* Vis.; *Tanacetum cinerariifolium* (Trevir.) Schultz-Bip.

Along with Illyrian Adriatic endemic plants, Illyrian Apennine plants (5 species, 1.46 %) can also be found. Both of the groups show the endemic character of the flora of the island of Zlarin.

Numerous cultivated species appear subspontaneously within the antropogeneous vegetation. These are: *Agave americana* L.; *Alcea rosea* L.; *Amaranthus caudatus* L.; *Anthirrhinum majus* L.; *Centranthus ruber* (L.) DC.; *Datura inoxia* Miller, *Erysimum cheiri* (L.) Crantz; *Iris germanica* L.; *Kochia prostrata* (L.) Schrader; *Lilium candidum* L.; *Lycopersicon esculentum* Miller; *Matthiola incana* (L.) R. Br.; *Mirabilis jalapa* L.; *Oxalis deppei* Lodd.; *Robinia pseudacacia* L., *Sorbus domestica* L., *Vinca major* L.; *Vitis vinifera* L.

Within the anthropochornous species an increasing number of *neophytes* have a special significance: *Aster squamatus* (Sprengel) Hieron, *Bidens subalternans* DC. and *Datura inoxia* Miller.

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SAŽETAK

Flora otoka Zlarina

Marija Pandža

Cjelokupna flora otoka Zlarina broji 404 biljne svojte. Zabilježena su 343 biljna taksona autohtone i antropokorne flore (331 vrsta i nižih sistematskih jedinica) u okviru 251 roda i 71 porodice. Također je utvrđena 61 vrsta koja se uzgaja kao korisno i ukrasno bilje.

Vrstama su najbogatije porodice *Fabaceae* (33 vrste) i *Poaceae* (37 vrsta) što ukazuje na antropokorni karakter vegetacije.

U spektru životnih oblika dominiraju terofiti (160 vrsta) što ukazuje na mediteranski karakter flore.

Mediteranskom flornom elementu pripada 155 vrsta (45.19 %). Ističu se brojnošću ilirsko-jadranske endemične biljke (11 vrsta) i ilirsko-apeninske biljke (5 vrsta).